

strawberry as *S. nebulosus*, saying further:

"The names I now give you are absolutely typical as far as Leconte's collection goes. Last summer his health was so poor and his eyesight so deceptive that I do not wonder that some of his comparisons were erroneous."

When we further notice that he was separated from his collection when he

wrote me, it need not surprise us that for once Jove nodded.

So far as the paper in *PSYCHE* is concerned, the errors will be eliminated if *pubescens* is changed to *nebulosus* wherever it occurs, as a re-examination of all the collections referred to shows that they consist of *nebulosus* only.

Illinois State Laboratory of Natural History,
17 April 1884.

PROTECTIVE SECRETIONS OF SPECIES OF ELEODES.

BY SAMUEL WENDELL WILLISTON, NEW HAVEN, CONN.

In connection with Dr. G. Dimmock's interesting article¹ on the glands opening externally in certain insects, it may be of interest to give some results of several years' observations of certain *tenebrionidae* on the Kansas plains. The following species, belonging to the genus *Eleodes*, viz., *E. acuta*, *E. suturalis*, *E. tricostata*, *E. obsoleta*, *E. extricata*, *E. longicollis*, and *E. hispilabris*, are abundant in the regions east of the Rocky Mountains, some of them very abundant, and with one or two exceptions, they all, when disturbed, eject a pungent, vile-smelling liquid. Perhaps the most disagreeable of these, in this respect, is *E. longicollis*, a beetle about two and a half centimetres long, which will eject a stream of fluid from the anal glands, sometimes to the distance of ten centimetres or more. This liquid has a strong, persistent odor, and leaves a brown stain upon the skin. Whether acid or alkaline in its reaction I cannot

say, but its effect upon the skin is very much like the first solution of carbolic acid, though less strong. Several times I have had small quantities reach my eyes, with disagreeable effects. Both sexes are equally provided with the secretion, and, in individuals which have not been exhausted, it is directed backward with considerable force, as I once learned to my entire satisfaction. I had seized a fine, large pair of *E. longicollis* by the thorax and held them up, at what I deemed a safe distance, for them to eject their vile secretion before placing them in my collecting bottle. Unfortunately they were provided with an unusually large quantity, and, both ejecting it simultaneously, I received it on my face and hands. A very noteworthy habit, moreover, in the species of this genus at least, and a constant one is that, when approached, they stand almost vertically with the abdomen directed upwards ready the moment they are touched, to eject their mephitic secretion. Among the species given in the forego-

¹*Psyche*, Sept.-Oct. 1882 [1 March 1884], v. 3, p. 357-401.

ing list, one (*E. tricolorata*, if my memory serves aright) seems to be entirely devoid of this secretion, but yet has the same habit of standing erect. These beetles are the veritable skunks of their order, and doubtless, like their ill-scented superiors, find protection in their comparatively as formidable weapon. They are apterous, and slow in their move-

ments, coming out from their hiding places when the sun is declining, and feed upon dead matter or excrements. On the bare plains they are readily seen, and I doubt not that they find protection from birds, and perhaps from skunks also, by means of their secretion.

[For further information on this subject, see Rec., 1430.]

A CURIOUS HABIT OF *CALLOSAMIA PROMETHEA*.

BY JOHN GEORGE JACK, CHATEAUGUAY BASIN, P. Q., CANADA.

FOR several years I have been very much puzzled, in summer, to account for numbers of green leaves, some being partly eaten, found on the ground beneath trees having long petioled leaves, such as maples and poplars, the petioles of which apparently had been eaten through by some insect. Last summer, while in New Jersey, I noticed similar occurrences beneath a sweet gum tree, *Liquidambar styraciflua*, and upon looking for the cause I found that it was the work of nearly full grown larvae of *Callosamia promethea*, which were feeding on the foliage. The petioles of *Liquidambar* leaves are usually very long (from 5 to 10 cm.) and quite slender.

To get at the leaves the caterpillar was either obliged to abandon the branch of the tree and crawl out on the leafstalk to the leaf, where it would be in a very dangerous position, with slight foothold, and where it was very probable that, owing to the weight of its body, it would break off the leaf at the node and fall to the ground; or, the

caterpillar must contrive to bring the leaf to itself in some way, while still keeping a sure foothold on the branch. To do this last required a little skill and I found that the caterpillar was equal to the task. Grasping the twig firmly with the anal and sometimes one or two pairs of the abdominal legs, it would extend the remaining portion of its body along the leafstalk, which it commenced eating. As soon as the leafstalk was about half eaten through, the caterpillar would recede a little and eat another place half through or more, and sometimes a third place. By this time the leafstalk had become so weakened that the leaf began to droop, and the caterpillar, reaching forward again as far as possible and grasping the stalk beyond the first incision, was able to bend it, and, drawing the leaf up to itself, eat it without losing its sure foothold on the tree.

Sometimes the leafstalk was eaten through a little too far, or broke off in bending, which accounted for the green leaves found on the ground.